

Compositae—Composite family

Tetradymia DC.

horsebrush

Lee E. Eddleman

Dr. Eddleman is professor of rangeland ecology at Oregon State University's Department of Rangeland Resources, Corvallis, Oregon.

Growth habit, occurrence and use. *Tetradymia* (horsebrush) is a rather low growing, multi-branched unarmed or spiny shrub, found either as well-scattered individuals or as small colonies mixed in with other vegetation. Some species may reach heights of 2 to 2.5 m but are more commonly 1 m or less. Reproduction is from wind-dispersed seeds and from sprouting of root crowns and rhizomes in longspine horsebrush, hairy horsebrush, spiny horsebrush, and cotton horsebrush (Hartman 1984; McArthur and others 1979; Mozingo 1987; Strother 1974). Eight species (table 1) are found, primarily in the Intermountain region and its fringe areas, and 2 species are found in southern California and Baja California (McArthur and others 1979; Strother 1974). Elevational range is from 800 to 2,400 m, although the southern California species range downward to 300 m. Horsebrush is commonly associated with the sagebrush vegetation type, but the genus has widespread occurrence from barren slopes and alkaline plains upward into the pinyon-juniper and yellow pine types.

Horsebrush provides ground cover and soil stability. It is generally considered of low forage value, although buds and new leaders are consumed by cattle, sheep, goats, antelope (*Antilocapra americana*), and mule deer (*Odocoileus hemionus*) (McArthur and others 1979). Most species are poisonous to sheep, especially smooth horsebrush (Johnson 1974; Kingsbury 1964). Flowers are used by small moths, bees, flies, and beetles (McArthur and others 1979). Gelechiid moths form galls in leaves and stems (Hartman 1984). Smooth horsebrush is considered ideal for desert landscaping because its leaves develop early and are dropped by mid-summer (Mozingo 1987). Late-season flowering species of horsebrush provide an attractive contrast to the vegetation types of dry areas.

Flowering and fruiting. Horsebrush flowers are borne in heads of 4 to 8 florets each and are located either in the axil of primary leaves or are clustered as dense racemes or corymbs at the tips of branches. Flowering begins as early as April and may last into September. Horsebrush species flower at the following times: stripped horsebrush, late June to early August; longspine horsebrush, April and May; gray horsebrush, late May through September; hairy horsebrush, June through mid-August; *T. filifolia*, July; smooth horsebrush, May through July; Nuttall horsebrush, late May and June; spiny horsebrush, April through August; Mojave horsebrush, late May through early August; and cotton horsebrush, June and July (Cronquest and others 1994; Mozingo 1987; Strother 1974). Longspine and smooth horsebrushes are the first to flower, whereas gray horsebrush flowers from late May through mid-September and has the unique characteristic among the horsebrush species, of flowering earliest in the north and progressively later southward (McArthur and others 1979; Strother 1974).

Collection, extraction, and cleaning. Horsebrush achenes (figures 1 and 2) are more or

less hairy and sometimes glabrous; they possess a well-developed pappus of bristles. As in similar plant forms (Eddleman 1977), the seeds may be hand-stripped or knocked from the head onto a canvas. Mature achenes from which the hairs have been removed have a light to medium reddish brown cast and a parismatic to fusiform shape. Cleaned seeds per weight are reported at 309/g (140,000/lb) for gray horsebrush (McArthur and others 1979) and may be less for the larger seeded species—Nuttall, spiny, Mojave, and cotton horsebrushes.

Germination. Germination is poor for gray horsebrush (Stark 1966), and only 2% of spiny horsebrush seeds germinated in one test (Swingle 1939). Some germination may occur without pretreatment, but prechilling seeds for 4 to 6 weeks is reported to help germination (Young and Young 1992).

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Figure 1—*Tetradymia glabrata*, smooth horsebrush: achene before and after cleaning, H 2.

Figure 2—*Tetradymia glabrata*, smooth horsebrush: longitudinal section through the achene, H 10.

Table 1—*Tetradymia*, horsebrush: nomenclature and occurrence

Scientific name & synonym(s)	Common name	Occurrence
<i>T. argyraea</i> Munz & Roos	striped horsebrush, striped cottonthorn	Mountains of E Riverside & San Bernadino Cos., California
<i>T. axillaris</i> A. Nels. var. <i>axillaris</i> var. <i>longispina</i> (M. E. Jones) Strother	longspine horsebrush	S Nevada into Inyo Co., California S California
<i>T. canescens</i> DC. <i>T. inermis</i> Nutt.; <i>T. multicaulis</i> A. Nels. <i>T. linearis</i> Rydb.	gray horsebrush, spineless horsebrush, common horsebrush	S British Columbia to S California E of Cascade–Sierra Nevada and from S Saskatchewan to N Arizona
<i>T. comosa</i> Gray	hairy horsebrush	SW California to N Baja California
<i>T. filifolia</i> Greene	threadleaf horsebrush	Central New Mexico
<i>T. glabrata</i> Torr. & Gray	smooth horsebrush, littleleaf horsebrush	Great Basin, SE Oregon & SW Idaho, Utah, Nevada, to S California, mostly E of Sierra Nevada
<i>T. nuttallii</i> Torr. & Gray H <i>T. spinosa</i> Nutt <i>T. permixta</i> Payson.	Nuttall horsebrush	SE Wyoming across central & N Utah to NE Nevada
<i>T. spinosa</i> Hook. & Arn. <i>Lagothamnus ambiguus</i> Nutt. <i>L. microphyllus</i> Nutt.	spiny horsebrush, cottonthorn horsebrush, catclaw horsebrush, shortspine horsebrush, thorny horsebrush	SE Oregon, S Idaho, SW Montana S across W Wyoming & and Colorado, NW Arizona, W to Sierra Nevada
<i>T. stenolepis</i> Greene	Mojave horsebrush	S California to extreme S tip of Nevada
<i>T. tetrameres</i> (Blake) Strother <i>T. comosa</i> Gray ssp. <i>tetrameres</i> Blake	cotton horsebrush, four-part horsebrush, dune horsebrush	Central N Nevada SW to Mono Co., California

Sources: Cronquest (1994), McArthur and others (1979), Mozingo (1987), Strother (1974).